

#### 4.2.3.4 Water Resources

Construction and operation of the proposed long-term storage facilities at INEL would affect water resources. No surface water would be withdrawn for construction or for normal operations. Instead, groundwater from the Snake River Plain Aquifer would be used, which is a sufficient source. Water requirements for normal operation for all storage options would fall within INEL's current allotment (43,000 million l/yr [11,360 million gal/yr]). The site proposed for the upgraded storage facilities would be outside the floodplain that could result from failure of MacKay Dam during a probable maximum flood. The site proposed for the Consolidation or Collocation Alternative, however, falls within that floodplain. During construction, treated sanitary wastewater would be discharged to lined evaporation ponds. While the potential impacts on surface water during the construction phase would result from erosion and sedimentation of drainage channels, the relatively dry climate and application of appropriate controls should preclude these potential impacts. No wastewater would be discharged on surface waters during operation of the facilities, nor would there be impacts on surface water quality from these activities. All wastewater would be treated and recycled for cooling system makeup. Stormwater runoff would be collected and treated, if necessary, before discharge to natural drainage channels. [Text deleted.] Table 4.2.3.4–1 presents No Action water resources uses and discharges and the potential changes to water resources at INEL resulting from the long-term storage alternatives.

#### **Preferred Alternative: No Action Alternative**

**Surface Water.** A description of the activities that would continue at INEL is provided in Section 3.4. Treated wastewater discharged to evaporation/infiltration ponds is expected to continue at a rate of 540 million l/yr (142.7 million gal/yr).

**Groundwater.** Under this alternative, no additional impacts on groundwater resources are anticipated. Current groundwater usage of 7,949 million l/yr (2,100 million gal/yr) is anticipated to decrease to 7,570 million l/yr (2,000 million gal/yr) by 2005. Existing tritium plumes in groundwater and in perched groundwater are expected to continue to migrate southwest slowly. Studies show that water withdrawals could change the existing plumes' southwesterly direction to the east.

#### **Upgrade Alternative**

##### ***Upgrade Without Rocky Flats Environmental Technology Site Plutonium or Los Alamos National Laboratory Plutonium Subalternative***

##### ***Modify Existing and Construct New Argonne National Laboratory-West Facilities for Continued Plutonium Storage***

**Surface Water.** There are no unique construction characteristics associated with water requirements and discharges from this alternative. No surface water would be withdrawn for any construction or operation activities associated with any of the proposed upgraded Pu storage facilities. Therefore, there would be no impacts on surface water availability. Nonhazardous wastewater generated during construction and operation of the upgraded Pu storage facilities would be diverted to either the sanitary or industrial waste treatment ponds, where it would be allowed to evaporate into the atmosphere and percolate into the subsurface. It is expected that a total of approximately 4.0 million l/yr (1.1 million gal/yr) of nonhazardous wastewater would be generated during the construction phase. This water would be discharged to the sanitary wastewater treatment ponds, where it would undergo aerobic and anaerobic treatment and then be allowed to evaporate to the atmosphere and percolate into the subsurface under NPDES permit requirements.

[Text deleted.]

During operation, utility, process, and sanitary wastewater for the upgraded Pu storage facilities would be diverted to the sanitary waste treatment ponds, where it would undergo aerobic and anaerobic treatment and then be allowed to evaporate into the atmosphere and percolate into the subsurface. Similarly, cooling system blowdown and stormwater runoff would be diverted to the industrial waste treatment ponds and ANL-W sewage lagoons, where it would be allowed to evaporate or percolate. Industrial and sanitary wastewater treatment pond water is monitored for the parameters specified in the site-specific NPDES permit. If evaporation pond capacity is limited, uncontaminated effluents would be discharged to natural drainage channels. Contaminated effluents would be diverted to, and treated in, the liquid radioactive waste treatment system before disposal.

No construction would occur in areas delineated as 100-year floodplains. The proposed site is also located above the maximum probable flood elevation, which is higher than the 500-year flood elevation. The closest large surface water body, the Big Lost River, is located approximately 16 km (10 mi) west of the proposed site. Because INEL is in a region where flash floods could occur, the facilities would be designed to withstand such flooding.

**Groundwater.** All water required for construction and operation would be supplied from groundwater from the Snake River Plain Aquifer. Construction water requirements for the upgraded Pu storage upgrade are small relative to INEL's total usage. As shown in Table 4.2.3.4-1, upgrading the ANL-W facilities would require approximately 9.7 million l/yr (2.6 million gal/yr) of water, which represents a 0.1-percent increase over the projected annual groundwater usage. Annual groundwater requirements for operation of the proposed facilities are estimated to be approximately 17 million l (4.5 million gal), which represents a 0.2-percent increase over the projected No Action groundwater usage. This small increase in overall demand should cause minimal impacts. This would increase the total projected amount to be pumped at INEL to under 18 percent of the total allotment.

Construction and operation of the proposed upgraded Pu storage facilities would not result in direct discharges to groundwater. Treated wastewater discharged to evaporation/infiltration ponds, however, would percolate downward into the groundwater. The water would be monitored and would not be discharged into the ponds until contaminant levels are within the limits specified. Impacts on groundwater quality are therefore not expected. In addition, other factors contributing to a lessening of potential impacts on groundwater are the combined effects of a deep water table, low discharge volumes, and high evaporation rates. Therefore, the tritium contamination problem in the Snake River Plain Aquifer, as identified in Section 3.4.4, would not be exacerbated by any of the long-term storage alternatives.

#### ***Upgrade With All or Some Rocky Flats Environmental Technology Site Plutonium and Los Alamos National Laboratory Plutonium Subalternative***

##### ***Modify Existing and Construct New Argonne National Laboratory-West Facilities for Continued Plutonium Storage***

The Pu storage upgrade using all or some RFETS Pu and LANL Pu material at INEL would increase water discharges during construction by 6.1 million l/yr (1.6 million gal/yr), or 1.1 percent over the projected No Action discharge during construction. During operations, wastewater would be recycled. All other wastewater requirements and floodplain issues of the Pu storage upgrade with RFETS Pu and LANL Pu material are similar to those of the Pu consolidated option. During construction, Pu storage upgrade using RFETS Pu and LANL Pu material would require 12.5 million l/yr (3.3 million gal/yr), or a 0.2-percent increase over projected No Action water use. During operations, 22 million l/yr (5.8 million gal/yr) of water would be required, or a 0.3-percent increase over projected No Action water use.

Water resources impacts for construction and operation upgrading with some RFETS Pu and LANL Pu material are expected to be similar to, but less than, those previously described for the other storage options at INEL.

## Consolidation Alternative

### *Construct New Plutonium Storage Facility*

The new consolidated Pu storage facility would be located just outside the ICPP area of INEL. The impacts associated with it are the same as those discussed above for the upgrade of the existing Pu storage area, with the following exceptions.

Sanitary wastewater quantities generated during construction of this alternative would be approximately 7.8 million l/yr (2.1 million gal/yr). These effluents would be discharged to evaporation/infiltration ponds. No impacts are expected. Surface water would not be used for this option, so no impacts on surface water availability would be expected. The groundwater requirements of this option are slightly greater than those for the previous option. This option would require approximately 85 million l/yr (22.5 million gal/yr) and 66 million l/yr (17.4 million gal/yr) of water for construction and operation, respectively. These additional requirements represent 1.1- and 0.9-percent increases, respectively, in the projected No Action annual withdrawals from the Snake River Plain Aquifer and should not cause any impacts on groundwater availability.

The proposed site for this facility falls within the estimated floodplain that could result from failure of the MacKay Dam during a maximum flood, which would be greater than the 500-year flood.

## Collocation Alternative

### *Construct New Plutonium and Highly Enriched Uranium Storage Facilities*

The new consolidated and collocated storage facilities would be located in the same area as the new storage facility, just outside the ICPP area of INEL. The impacts associated with it are the same as those discussed above, with the following exceptions.

Sanitary wastewater quantities generated during construction and operation of this option would be greater than for the previous option and are approximately 12.8 million l/yr (3.4 million gal/yr). These effluents would be discharged to evaporation/infiltration ponds. During operations, wastewater will be recycled. No impacts are expected. Groundwater requirements during construction and operation of this option would be slightly greater than those for the new Pu storage facility. This option would require approximately 104.7 million l/yr (27.7 million gal/yr) and 87 million l/yr (23 million gal/yr) for construction and operation, respectively. These additional requirements represent 1.4- and 1.2-percent increases, respectively, in the projected No Action annual groundwater withdrawals. These small increases boost the total projected groundwater withdrawal to a maximum of 17.8 percent of the groundwater allotment; there should be no impact on groundwater availability.

## Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

Water resource impacts for construction and operation for this option are expected to be slightly less than those previously described for the Pu consolidated and Pu and HEU collocated storage alternatives at INEL because of the reduction in the amount of material. [Text deleted.]

## Phaseout

If the current Pu storage mission at INEL was phased out, groundwater withdrawals from the Snake River Plain Aquifer and nonhazardous wastewater discharge to evaporation/percolation ponds would decrease by negligible quantities. No noticeable impacts would occur or be alleviated due to these decreases.

[Text deleted.]